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METHOD OF ESTABLISHING COOPERATIVE SERVICES IN A COMPUTER SYSTEM

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The present invention relates to a method of achieving co-acting services in a data system.

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There is described in European Patent Specification No. 0928548 a prior art system for executing a telephone service where said service is executed by calling a number of transactions from a database containing said transactions, whereafter the services are executed. This system is tied to a local system, in other words execution takes place on the

10 computer called directly or indirectly by a client.

With regard to the management of greater and more complex services, it is probable that more than one called computer will be required to participate in the processing of information and the execution of the services.

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This problem is resolved by means of the present invention, which enables several computers to co-act with one another.

The present invention thus relates to a method of achieving mutually co-acting services in

20 a data system that includes telephone services and/or data services, wherein said data system includes a first computer system and at least one further, a second, computer system, wherein each computer system includes a computer with associated memories, wherein the first and the second computer system are respectively connected to at least one communications database that includes communications services, particularly telephone

25 and data services, stored as transaction references, i.e. as references to transactions, wherein the computer system is adapted to execute the communications services in accordance with a data program, wherein at least one transactions database connected to each computer is caused to contain a predetermined number of transactions that are identified by said transaction references, wherein each transaction is in the form of parts of

30 a data program and wherein respective computer systems are caused to fetch one or more transactions from said transaction database or databases, said transactions together forming a data program for executing said services, and wherein the invention is characterised in that said transactions include instructions concerning said services and also other concerned services that shall be executed by the data system; in that initiation to fetch

transactions for execution in the data system is caused to take place by means of a call incoming to the system from a telephone or from an external computer to which a communications service is tied in the communications database; in that the call includes an information part in the form of an identification of the called (ID) and an indication of the type of call and in that the first computer system and the second computer system are caused to have an execution environment such that generally all execution processes and all instructions from a computer system to other computer systems in the data system are caused to be effected through the agency of said transactions; and in that given transaction references identify transactions which upon execution cause the service concerned to be transferred to a computer system other than the call-receiving computer system, for execution of the earlier mentioned computer system; and in that said information part is transferred in said transfer process.

The present invention will now be described in more detail partly with reference to an exemplifying embodiment illustrated in the accompanying drawing, in which

- Figure 1 is a block diagram of two mutually co-acting computers in a data system.

Figure 1 illustrates two mutually co-acting computer systems, each comprising a computer 1, 2 with associated databases.

Each computer system 1, 2 is connected to at least one communications database 3, 4 that includes communications services, particularly telephone and data services, stored as transaction references (TRS), i.e. as references to transactions, where said computer systems are adapted to execute the communications services in accordance with a data program. Each computer 1, 2 has connected thereto at least one transaction database 5, 6 which are caused to contain a predetermined quantity of transactions that are identified by said transaction references.

Each transaction is defined by means of said transaction references, for instance by the two transaction references referenced TRS.10 and TRS.12. The transactions *per se* are in the form of parts of a data program, wherewith computer systems are caused to fetch one or more transactions from said database or databases, these transactions forming together a data program for executing said service.

According to the invention, said transactions include instructions relating to said services and also to additional services that shall be executed by the data system comprising two or more computers.

5   Fetching of transactions for execution in the system is caused to be initiated by means of a call 6 incoming to the system from a telephone or from an external computer to which a communications service is tied in the communications database 3 in the event of the call incoming to the data system 1.

10   The call 6 includes an information part 7 in the form of an identification of the called 8 (ID) and an indication 9 of the type of call. The type of call may be a voice call, a data communication, a transaction, etc.

According to the invention, a first part 1 of the computer system and also a second part 2 15   and also further parts of the data system are given an execution environment whereby essentially all execution and all instructions from a computer system 1 to other computer systems 2 in the data system are caused to take place through the agency of said transactions. In this regard, the information part 7 is transferred from a transmitting computer system 1 to a receiving computer system 2.

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Each computer system includes a known type of computer 10, 11 with associated memories.

The execution environment is preferably the environment described in the aforesaid 25   European patent specification.

In response to the aforesaid call, the data system functions to execute the steps of at least determining the identity 8 of the user and the type of call 9 concerned. In this regard, the communications database 3; 4 causes the computer to fetch the transaction references that 30   are tied to the called party and the type of call concerned. The type of call may be a speech call, data communication, transactions, etc. The transaction references fetched define the services which are called for and which shall be executed. The computer is caused to fetch on the basis of the fetched transaction references those transactions in the transaction

database 5 that correspond to said transaction references, whereafter the services are executed through the agency of said transactions.

According to the present invention, certain transaction references identify transactions which, upon execution, cause the service in question to be transferred to a computer system 2 other than the call-receiving computer system 1, for execution in the aforesaid computer system 2 and wherein said information part 7 is transferred in the transfer of said service to the other computer system 2.

Thus, when a call arrives at the computer system 1, said system fetches transaction references from the communications database 3, whereafter transactions corresponding to said references are fetched from the transaction database 5 and executed in the first computer system. One or more of these transactions may cause the execution of said service to be transferred, upon execution, to an other computer system 2 via an API 12 (Application Program Interface). Thus, the service to be executed lands in the second computer system 2. Because the information part 7 accompanies the transfer, the second computer system will detect this information part. This enables the execution to be distributed to a manifold of computer systems.

According to a very important feature of this transfer process, transaction references for the execution of a given service are transferred from a computer 10 to another computer 11 within the data system. The computer systems to which the transfer is made thus obtains transaction references and fetches reference-corresponding transactions from said transaction database. This results in the transfer of only a small amount of data in comparison with the amount that would be transferred if all transactions were transferred.

In the event that a computer system does not have a transaction corresponding to a transferred transaction reference, the computer system that received the transaction references is caused to return the task to the computer system from which the task arrived.

However, in addition to transferring transaction references in the newly mentioned case, a computer system may also be caused to transfer one or more transaction references with associated transactions to another computer system, provided that the transferring computer system is aware that the transactions are missing in the other computer system.

In order for the invention to obtain full effectiveness, it is essential that all of the aforesaid computer systems are caused to have mutually the same execution environment.

5   According to one preferred embodiment of the invention, respective communications databases are also caused to contain references to transactions concerning the further services that may later be executed in response to a requested communications service. Such a further service may be the transfer of execution to another computer system.

10   It is thus essential that the first computer system is caused to fetch transactions from said transaction database corresponding to a service initiated by said call in response to a direct call or an indirect call via said further computer, from a telephone or external computer, wherewith the first computer system is caused to distribute transaction references to one or more of said further computer systems, and wherewith each of the last-mentioned
15   computer systems is caused to fetch transactions from respective computer-system transaction databases, in order to execute the service defined by the transaction references.

An illustrative example in this case may be the price or tariff set for a telephone or data service. In this respect, a number of the first computer systems 1 may be located at
20   different places in the country for administrating telephone services or data services on behalf of clients in different parts of the country.

When a call 6 arrives at the first computer system, the service is connected between the calling subscriber and the desired contact. This is effected by executing transactions in the
25   first computer system. One or more transactions concerns price setting and a transfer of the price setting procedure to the second computer system. The second computer system receives transaction references from the first computer system, which causes the second computer system 2 to fetch transaction references relating to price setting from its communications database 4. These transactions have been exemplified in Figure 1 by the
30   references TRS.10 and TRS.11.

These transactions are executed in the second data system 2, wherewith the transactions cause, among other things, a price-setting database 13 to be called and the price stored in a memory 14 and then later billed to the client whose information part 7 was transferred

from the first computer system to the second computer system in respect of the call 15 between the computer systems.

The present invention is in no way limited to the execution of the described service.

Although the invention has been described with reference to a number of embodiments thereof, it will be understood that the computer systems may comprise more than two systems and that the systems may be adapted to those services or the like to be executed.

The present invention shall therefore not be considered to be restricted to the above described exemplifying embodiments thereof, since variations and modifications can be made within the scope of the accompanying Claims.